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Employment Growth in Iowa's Targeted Industries, 1992-97

**Iowa State University
Department of Economics**

Authors¹

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Introduction

Iowa's economy has transformed markedly over the years. For more than a decade, the state has enjoyed persistent nonfarm employment growth. The economy of the 1990s, in terms of its composition, is substantially different from the economy of a decade or two before. Some of the changes mirror changes made nationally -- the emergence of information technologies, computers, software, along with the expansion of the personal and business services sectors. Other changes are unique to the state and may represent a capitalization upon Iowa's existing strengths, i.e., food processing, animal and plant sciences. In addition, some of the changes may represent broad-based shifts in the location and kinds of production nationally.

State economic development programs face twin tensions. They must invest enough resources in a targeted manner so there are tangible, quantifiable results, and they must, for lack of better words, try to spread the wealth as broadly as possible in order to benefit as many areas of the state as possible. The state finds itself trading utilitarian concerns with spatial equity concerns: how can it maximize the well-being of the most persons with the least public dollars, versus, how can it maximize the well-being of as many places as possible?

The state hasn't the time or financial resources to court all industries. Conventional investment wisdom suggests Iowa should direct its economic development efforts toward a set of industries that will bring the greatest return to the state's economy. Research originating in the mid 1980s helped the state focus its development efforts. A 1992 study by the consulting firm Battelle for the Iowa Department of Economic Development produced a list of targeted industries that mixed state economic strengths with emerging industrial potential. Since then, the state has targeted specific industries for growth in order to stimulate, diversify, and strengthen its economy.

This report compares employment growth in some of Iowa's targeted industries over the 1992 to 1997 period with an eye towards evaluating their performance as a group, as sets of industries, and regionally. The report also evaluates how Iowa's targeted industries contribute to the state's overall economy in ways beyond employment growth.

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This report is the second in a series of reports focusing on recent patterns of employment change in Iowa's economy. The first report, titled "Nonfarm Employment Change in Iowa, 1987-97," described broad changes in employment by industry and characteristics of employment growth by kind of county. In the second and third reports, the focus narrows to specific groups of industries. This report focuses on the state's targeted industries. Iowa's value-added agricultural industries will be discussed in the third.

Why has Iowa targeted specific industries for growth?

Specific industries are currently targeted for growth based on their potential to diversify, strengthen, or otherwise enhance Iowa's economy. The criteria used to evaluate this potential include:

- The majority of the business's products are sold to customers outside of Iowa or, if a service industry, the majority of the business's customers are located outside of Iowa. This means these firms are considered net exporters of industrial goods or services.
- The industry in which the business is engaged shows potential for future growth.
- The majority of the business's suppliers are located in Iowa. This indicates the firms have strong linkages with existing firms.
- The business uses raw materials native to and mined or otherwise obtained from Iowa sources. Industries such as these are desirable because they add value to raw commodities.
- The industry's products or services diversify Iowa's economy. This helps protect the economy from industry-specific declines, as might be evidenced, for example, by recent low farm commodity prices.
- The average wage paid by the business exceeds the state-wide average wage. This is especially important to Iowa because the state has experienced a significant reduction in average earnings relative to the national average over the past two decades.
- The business's products or services decrease the importation of foreign-made goods into the United States or into Iowa. Import substitution is an important, but often ignored, way of enhancing an area's economy.
- The business does not generate hazardous waste or is in any other way harmful to Iowa's natural environment.

What are Iowa's targeted industries?

Broadly defined, Iowa's targeted industry list includes almost 80 different kinds of industries that span four sectors: Manufacturing; Transportation, Communications, and Public Utilities (T.C.P.U.); Finance, Insurance, and Real Estate (F.I.R.E.); and Services. The targeted industries discussed in this report are grouped into eight categories: Financial Services; Telecommunications; Computing Services; Foods & Related Products; Metals & Fabricated Metals; Plastics; Printing & Publishing; and Computing & Measuring Devices. Table 1 contains broad descriptions of Iowa's targeted industries.

Table 1. Industries by Target Group²

Target Group	Sector	Industries
Financial Services	F.I.R.E.	Banking and Credit Institutions, Security and Commodity Brokers, and Insurance Carriers, Agents, and Brokers
Telecommunications	T.C.P.U.	Telephone, Radio, Television, and Other Communications
Computing Services	Services	Computer Programming and Data Processing
Foods & Related Products	Manufacturing	Food and Kindred Products and Pharmaceuticals
Metals & Fabricated Metals	Manufacturing	Metal Smelting, Metal Refining, and Fabrication of Metal Products, Machinery & Tools
Plastics	Manufacturing	Plastics & Synthetics Manufacturing
Printing & Publishing	Manufacturing	Printing, Publishing, and Allied Industries
Computing & Measuring Devices	Manufacturing	Computers, Electronics, Instruments for Navigation and Measurement

How important are the targeted industries to Iowa's overall economy?

The targeted industries' importance to the state's economy can be measured in several ways:

- the target industries' shares of Iowa's total nonfarm employment
- the percentage of Iowa's total output produced within these industries
- estimates of target industry employment contributing to export activity for Iowa
- measures of target industry dependence on locally supplied inputs
- ratios of targeted industry average earnings to statewide average earnings and
- the rate at which the targeted industries are adding new jobs to the state's economy

Target Industry Shares of Nonfarm Employment and Output

As a group in 1997, the targeted industries comprised about one-fifth of Iowa's nonfarm jobs and contributed just under one third of the state's total nonfarm output, measured by sales. Of all eight target groups, Financial Services was the largest in terms of employment, while the Foods & Related Products group contributed the largest share of total nonfarm industry output. Table 2 shows the percentage of Iowa's total employment and industrial output (gross sales) for each target industry group.

Iowa's economy was slightly more dependent on these eight industry groups than the United States economy as a whole. The percentage of nonfarm employment in these industries was 18 percent in Iowa and 15 percent in the United States. These target industries contributed

² A report by SRI International for the Iowa Target Industry Cluster Strategy Project (May 2000) contains detailed descriptions and alternative groupings of Iowa's targeted industries. Another list of Iowa's targeted industry groups may be found in the Program Description for the Targeted Industries Workforce Training Program at the Iowa Department of Economic Development. The targeted industry list used for this report was compiled using these two data sources. The industry groupings were selected by the authors to facilitate comparisons of employment and earnings changes by major industrial sector, and thus are not "official" descriptions of Iowa's targeted industries.

about 30 cents of every dollar of goods and services sold in Iowa, compared to 23 cents per dollar for the United States.

Target Industry Location Quotients

The concentration of employment in Iowa's targeted industries imply specialization, which should translate into export activity for the state. Using location quotients, we can measure the degree of specialization by industry or industry group.

A location quotient compares the percentage of local employment in a particular industry to the percentage of national employment in that same industry. A location quotient greater than 1.0 implies the industry is at least large enough to meet state demand and is likely exporting goods or services outside the state. A location quotient less than 1.0 indicates the state is not self-sufficient in that industry and is probably importing its goods or services.

Table 2 shows the location quotients for each target industry group. Four of the target groups had location quotients close to one, meaning Iowa has expected proportions of total employment in these industries. Foods & Related Products was the only group with a location quotient substantially greater than one. This indicates strong export activity for goods produced in those industries. The location quotients for Computing & Measuring Devices, Telecommunications, and Computer-Related Services were well below one, suggesting that Iowa might have substantial growth opportunities for local production of these goods and services.

Table 2. Location Quotients

Target Group	Percentage of Iowa's Nonfarm Employment	Percentage of Iowa's Nonfarm Output	Location Quotient
Financial Services	5.5 %	6.0 %	1.1
Telecommunications	1 %	1.7 %	0.8
Computing Services	1 %	0.7 %	0.7
Foods & Related Products	4 %	13.3 %	2.3
Metals & Fabricated Metals	2.5 %	3.9 %	1.1
Plastics	1 %	1.3 %	1.0
Printing & Publishing	2 %	1.7 %	1.2
Computing & Measuring Devices	1 %	2.2 %	0.7

Target Industry Multipliers

Export activity represents just one desirable quality of a target industry. Industries that obtain a majority of their inputs from local suppliers or resources also contribute to the state's overall economic health. Economists often use job or income multipliers to determine the degree to which an industry obtains its inputs from within the region. These multipliers can be obtained from input-output (I-O) models of industrial activity in a region. An I-O model was compiled that isolated the industrial categories targeted by the state of

Iowa. This model allows us to characterize the dependence of different firms on inputs supplied by Iowa-based industries. These values are listed in Table 3.

For every dollar of output in the industrial groups, we get an estimate of value of the purchases they make from Iowa-based suppliers. Not surprisingly, given the state's agricultural dominance, the input coefficient is highest for the Food & Related manufacturing firms. These firms require 59 cents of Iowa-supplied inputs per dollar of sales. Both Computers & Electronic manufacturing and the Navigation and Measurement sectors had input values in excess of 50 cents. Comparatively less dependence on Iowa inputs is found in Printing and Publishing (25 cents), Finance & Insurance (21 cents), Machinery and Tools (21 cents), and Fabricated Metals (20 cents). Other Metals, Pharmaceuticals, and Plastics showed more middle ranges of dependencies, ranging from 29 cents per dollar of output to 39 cents.

Table 3. Iowa Inputs per Dollar of Industrial Output

Industry	Inputs (\$)
Food & Related	0.59
Printing & Publishing	0.25
Plastics & Synthetics	0.37
Other Plastics	0.39
Pharmaceuticals	0.33
Metals	0.29
Metals Fabricated	0.20
Machinery & Tools	0.21
Computers & Electronic	0.51
Navigation & Measurement	0.56
Other Communications	0.25
Finance & Insurance	0.21

Average Earnings per Job

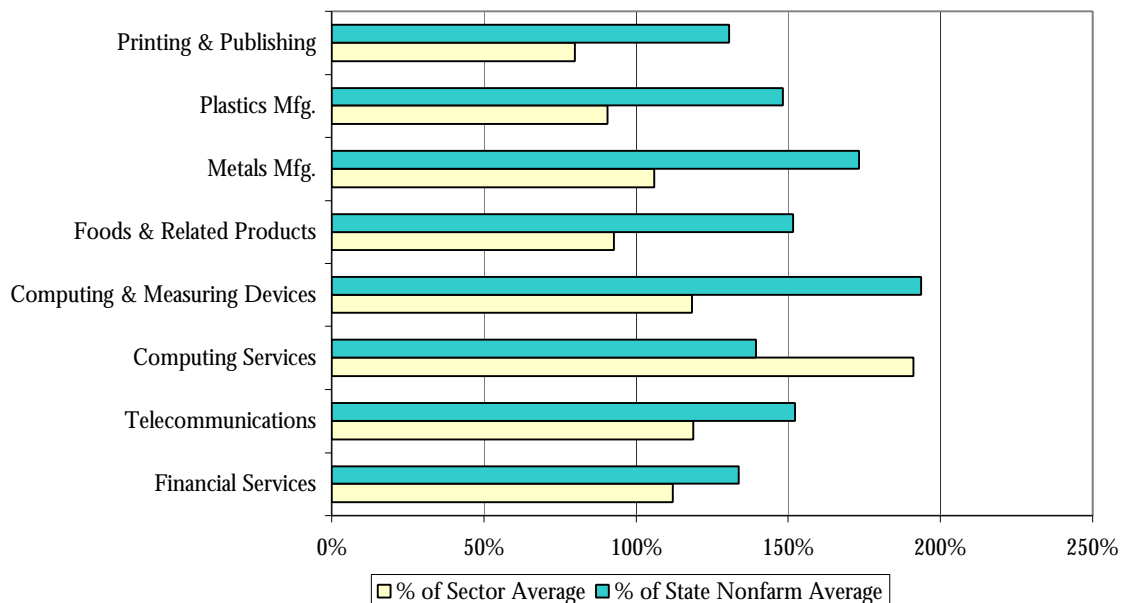
The average earnings per job in all target industry groups exceeded statewide average earnings per nonfarm job in 1997. Manufacturing industries in the Computing & Measuring Devices target group had the highest average earnings, paying almost twice the state average rate for all nonfarm jobs. Metals manufacturing jobs had the second highest average earnings relative to the statewide nonfarm average.

We also assessed whether the target groups exceeded their sectoral averages or not. Most of the target groups had above-average earnings within their respective industrial sectors. Targeted industries within the Finance, Insurance & Real Estate (F.I.R.E.) sector paid about 12 percent more than the average for all F.I.R.E. jobs in Iowa. The targeted telecommunications industries in the Transportation, Communications, & Public Utilities (T.C.P.U.) sector paid about 20 percent more than average T.C.P.U. jobs. The earnings per worker in targeted Computing Services industries were almost twice the average earnings of all service jobs in Iowa.

While earnings in the Computing & Measuring Devices and Metals manufacturing industries were above statewide average manufacturing earnings, the Printing & Publishing, Plastics, and Foods & Related Products target groups were below average for all manufacturing jobs in Iowa. Figure 1 shows the target group average earnings per job as a percentage of sector average earnings and statewide nonfarm earnings in 1997.

Figure 1

Iowa's Targeted Industry Average Earnings Relative to Major Sector and Total Nonfarm Average Earnings, 1997



New Jobs Added

Although the factors discussed up to this point all help determine how an industry contributes to a state's overall economic health, job growth is often the most familiar measure. The targeted industry groups contributed about 25,000 new jobs to Iowa's economy from 1992 to 1997. This represented about 16 percent of nonfarm job growth in Iowa³.

³ There are a variety of ways to measure industrial and employment changes in Iowa and among its counties. The U.S. Bureau of Economic Analysis annually releases its Regional Economic Information System data. Among the data supplied are counts of jobs in major industry groups.

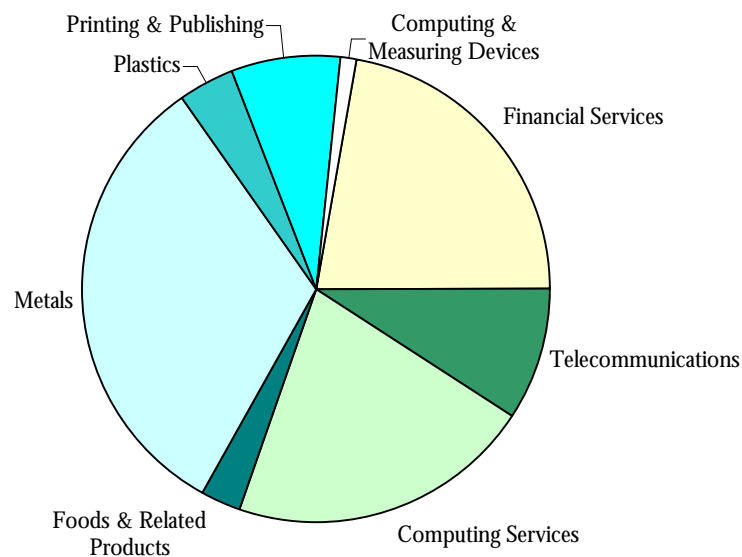
Jobs are different from employed persons. An employed person can hold more than one job, so job growth nearly always exceeds growth in employed persons. Another source of data are E.S. 202 files (E.S. means Employment Services). This data set has a high amount of specificity, but disclosure rules may prevent reporting the findings in small detail. These data contain the number of employed persons and the amounts of quarterly withholdings for social insurance for firms with employees. These data are useful in isolating changes in employed persons in business firms, but they do not

The targeted industry employment growth was split almost evenly between manufacturing and non-manufacturing industries. The non-manufacturing industries in the Financial Services, Telecommunications, and Computing Services groups contributed slightly more than half of the new jobs between 1992 and 1997. Insurance and financial services jobs represented about 22 percent of the targeted industry growth. Computer-related service jobs represented about 20 percent, and telecommunications jobs represented another 10 percent.

Metals manufacturing jobs represented about 30 percent of targeted industry employment growth, making this group first among all eight target groups in the number of new jobs. Among the manufacturing target groups, Printing & Publishing was second behind Metals with about 8 percent of new targeted industry jobs. Foods & Related Products, Plastics, and Computing & Measuring Devices combined for the remaining 10 percent of targeted industry employment growth. Figure 2 shows the distribution of targeted industry employment change from 1992 to 1997 by target group.

Figure 2

Composition of Targeted Industry Employment Change, 1992-97



allow us to get any information on a large fraction of "sole-proprietors" who do not have employees, as they are likely exempt from reporting. A third source of data are the annual County Business Patterns data base and publication from the U.S. Census Bureau. These data identify employment in private firms and the number of firms in specific industrial groups, but they do not give us any information about the public sector. In this report, we are primarily relying on ES 202 files for comparisons. When comparisons are made with the U.S., however, we use the County Business Patterns data.

How are Iowa's targeted industries performing relative to the rest of the nation?

Statewide growth in several targeted industries outpaced national rates from 1992 to 1997, following general trends in the state's overall nonfarm economy. Nonfarm employment in Iowa grew at a rate slightly faster than the national average from 1992 to 1997, although growth rates varied by major industrial sector.

Iowa's employment grew faster than national average rates in the Finance, Insurance, & Real Estate (F.I.R.E.) and Manufacturing sectors. Within these two sectors, most of the state's targeted industries also grew faster than national average rates.

Employment in the Financial Services target group increased by about 8.5 percent while the national rate of growth in these industries was 5.5 percent. Growth rates in two of five manufacturing target groups more than doubled national rates. These groups were Printing & Publishing and Metals manufacturing. Plastics manufacturing employment also grew faster in Iowa than the national average.

A notable exception to Iowa's strong manufacturing performance occurred in the Foods & Related Products manufacturing group. Iowa's employment grew by about half the relatively low national rate. Foods & Related Products manufacturing employment increased by slightly more than 5 percent in the United States from 1992 to 1997.

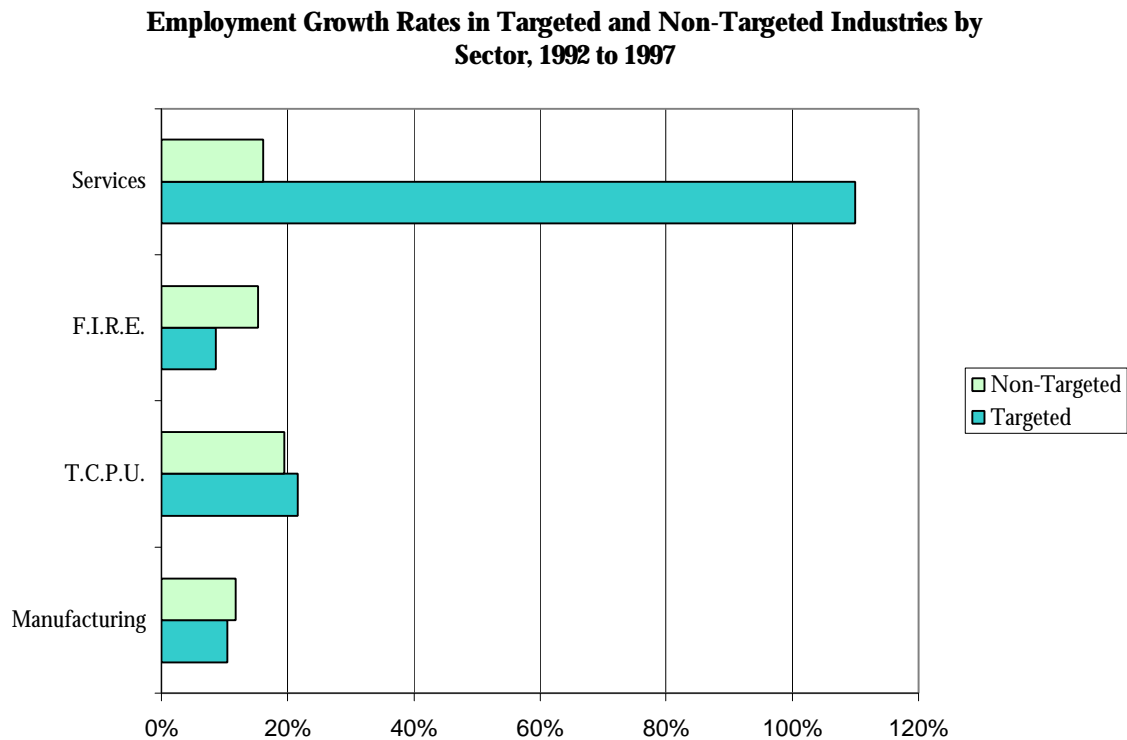
The national average growth rate in the Computing & Measuring Devices manufacturing group was also low, and Iowa's employment growth rate was probably close to the national average of 2 percent. However, because many Iowa jobs in these industries were reclassified to new Standard Industrial Classification system codes between 1992 and 1997, employment change estimates for this target group should be used with caution.

Iowa's employment grew more slowly than national average rates in the Service and Transportation, Communications & Public Utilities (T.C.P.U.) sectors. Within these two sectors, the state had a mixed performance relative to national averages in targeted employment growth. Although computer-related service employment grew more rapidly than any other target group in Iowa, the rate was lower than the national average for these industries. In contrast, employment growth in Iowa's targeted telecommunications industries almost doubled national rates, even though the state's overall T.C.P.U. sector grew more slowly than the national average.

How have the targeted industries performed relative to the rest of Iowa's economy?

Iowa's overall rate of nonfarm employment growth from 1992 to 1997 was about 14 percent. Together, the targeted industries grew at an average rate of 13 percent, although these rates varied substantially by target group and sector. Figure 3 shows a comparison of employment growth rates in targeted and non-targeted industries by sector.

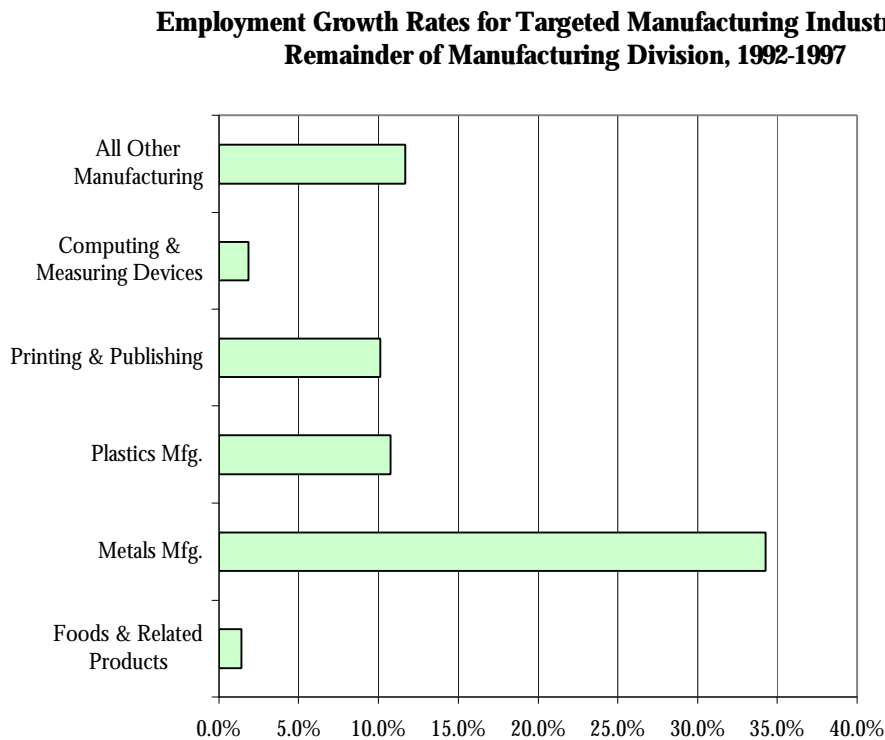
Figure 3



Employment in Iowa's targeted computer-related service industries more than doubled between 1992 and 1997. This growth rate far exceeded rates in other Iowa service industries. Targeted industries in the Transportation, Communication & Public Utilities sector also grew more rapidly than other, non-targeted T.C.P.U. industries. In contrast, the non-targeted industries within the Finance, Insurance & Real Estate sector grew more rapidly than the targeted industries.

In the Manufacturing sector, employment in four of five targeted industries grew more slowly than employment in other industries not specifically targeted for growth. The exception occurred in Metals manufacturing, where employment grew more than 30 percent between 1992 and 1997. Employment in Foods & Related Products grew most slowly of all the targeted manufacturing groups at about 1.5 percent. Figure 4 shows the growth rates for the targeted manufacturing groups relative to non-targeted manufacturing industries.

Figure 4



The preceding comparisons highlight the degree of variation among national, state, targeted, and non-targeted industry employment growth rates by sector, and demonstrate an important investment principle. Like any well-structured investment portfolio, Iowa's targeted industry program is diversified across a broad range of industrial activities. Slow growth in some targeted industries was offset by rapid growth in others between 1992 and 1997. In the end, the "portfolio" of targeted industries grew at almost the same rate as the state's overall nonfarm economy.

While overall employment growth is certainly one of the primary goals of the targeted industry program, the state does have other concerns. Iowa's economy took several years to recover employment and population losses suffered during the Farm Crisis of the early 1980s. Since that time, the state has worked to diversify its overall economy and reduce its vulnerability to downturns in any one industry. The targeted industry program represents part of that effort. The industrial mix of targeted industry employment growth between 1992 and 1997 suggests some progress on that front. The following section discusses the industrial mix of targeted industry employment growth in more detail.

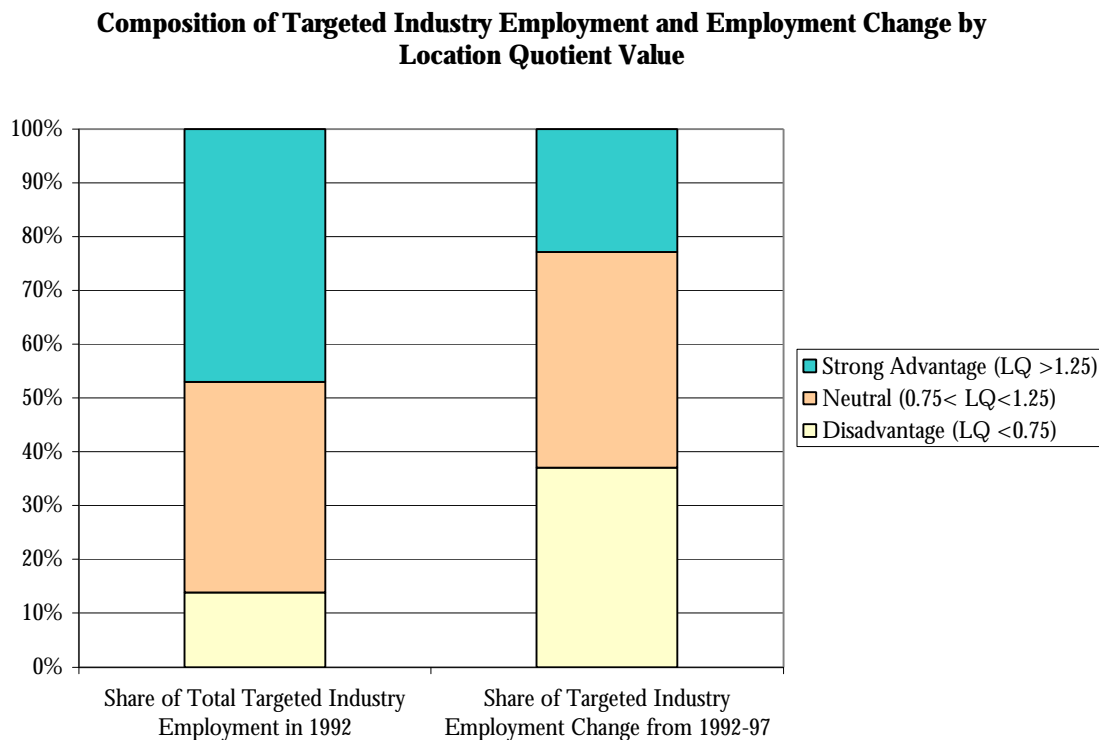
Has targeted growth changed the industrial structure of Iowa's economy?

As Figures 3 and 4 illustrate, employment growth rates by target group range from the 1.5 percent low in Foods & Related Products manufacturing to a high of 110 percent in Computing Services employment. These two extremes highlight an important dimension of

recent employment growth in Iowa's targeted industries -- slower growth has occurred in the group of industries traditionally considered as core industries for Iowa. More rapid growth occurred in industries with low concentrations of employment relative to other states.

Figure 5 compares employment shares and employment growth shares for Iowa's targeted industries based on location quotient values. We calculated location quotients for the 80 industries included in Iowa's eight target groups. A location quotient greater than 1.25 indicates a relatively high concentration of employment and suggests a regional advantage. A location quotient between 0.75 and 1.25 suggests an average employment concentration, or perhaps a slight regional advantage or disadvantage. A location quotient less than 0.75 suggests a regional disadvantage.

Figure 5



In 1992, about 15 percent of targeted industry employment was in industries whose location quotients suggested a relatively weak presence in Iowa. These industries contributed almost 40 percent of targeted industry employment growth during the next five years. An additional 40 percent of targeted industry growth occurred in industries with only a moderately strong presence in Iowa in 1992. Meanwhile, industries with relatively high employment concentrations contributed just over 20 percent of targeted industry employment growth, contrasting strongly with their nearly 50 percent share of employment in 1992.

These patterns suggest a gradual diversification of Iowa's economy, which is one of the goals of targeted growth. By 1997, Iowa's nonfarm sector was slightly less dependent on Financial Services and Foods & Related Products industries than in 1992, and slightly more dependent on Computing Services and Metals industries. The concentration of employment in Telecommunications, Printing & Publishing, Plastics, and Computing & Measuring Devices remained about the same.

While diversification by industry is important, so too is diversification by geographic region. Significant fractions of Iowa's recent employment growth have gravitated toward metropolitan counties. Despite this pattern, many of the state's economic development efforts are designed to encourage growth in non-metropolitan counties. In the next sections we examine the geographic distribution of targeted industry employment growth in Iowa.

Have employment gains in targeted industries accrued to specific geographic regions of the state?

Patterns of employment growth differ among Iowa's counties, depending usually and relatively predictably on their level of urbanization. Therefore, we often use population size to group the counties when we study the distribution of employment gains within the state. In this report, we use four county groups: metropolitan, large urban, small urban, and rural.

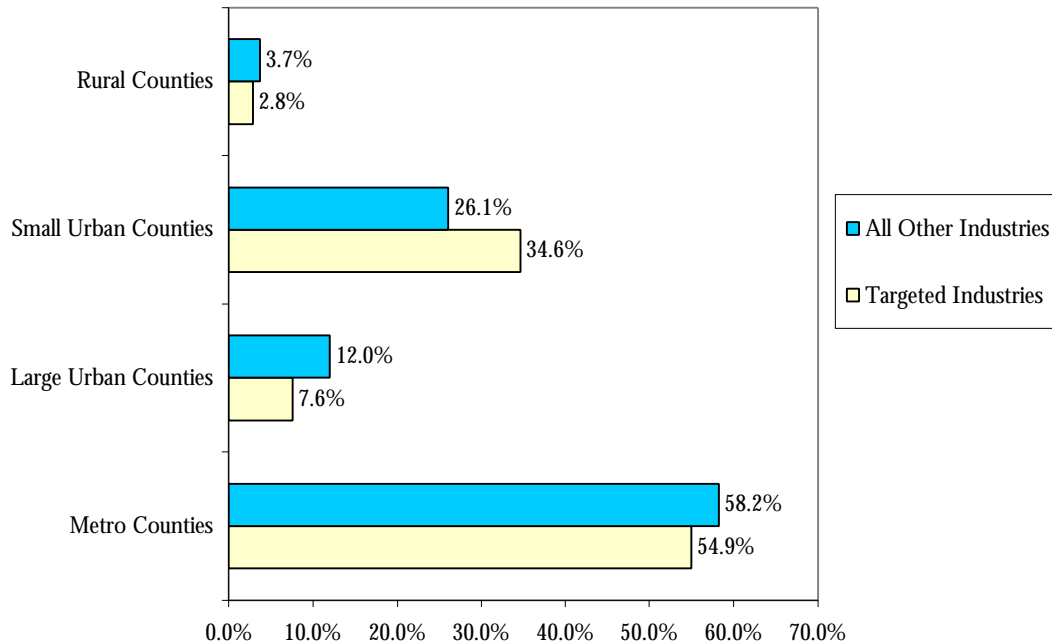
Iowa has 10 metropolitan counties, nine large urban counties, 60 small urban counties, and 20 rural counties. Metropolitan counties contain a central city of at least 50,000. Large urban counties are smaller than metropolitan counties, but have a central city of 20,000 or more. Small urban counties have a city of 2,500 or more. The remaining counties are the rural counties.

In general, the distribution of targeted industry growth in Iowa approximated the distribution of all other nonfarm employment growth by county group. The metropolitan counties attracted more than half of Iowa's nonfarm employment growth from 1992 to 1997, and more than half of targeted industry growth as well. The small urban counties attracted more than one quarter of statewide nonfarm and targeted industry employment growth. The large urban counties had the third largest share in both categories, and the rural counties had the smallest share.

Targeted industry growth favored the small urban counties slightly more than non-targeted industry growth. The small urban county group was unique in this experience. The shares of statewide targeted industry growth were slightly smaller than shares of non-targeted growth in the metropolitan, large urban, and rural county groups. Figure 6 shows the distribution of targeted and all other nonfarm employment growth among the four county groups.

Figure 6

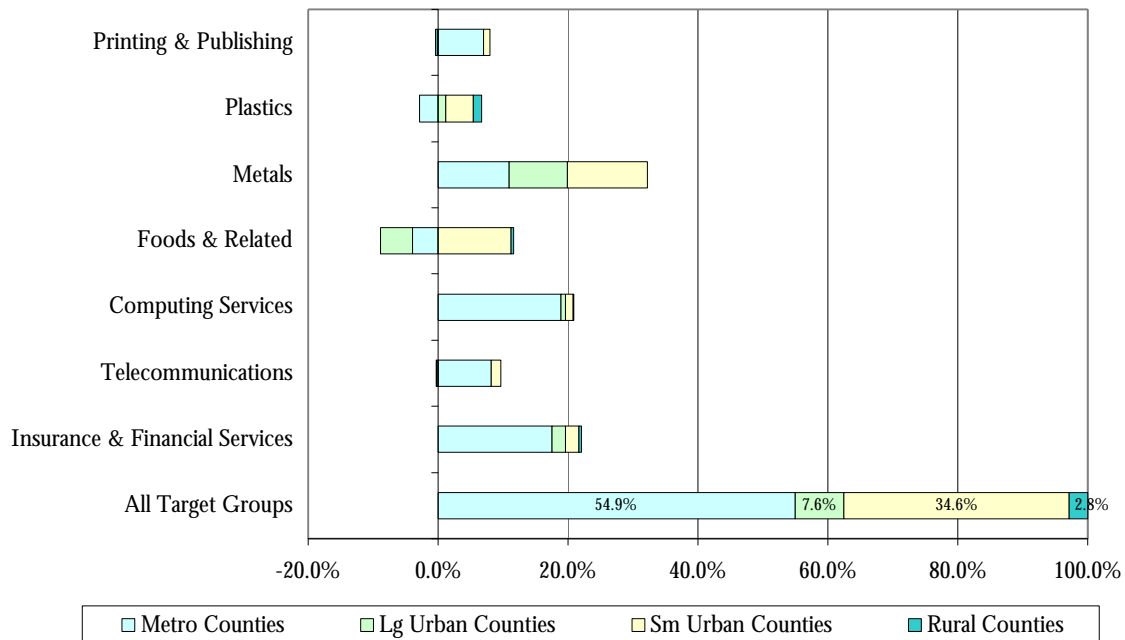
Percentage of Statewide Employment Growth by County Group from 1992-1997, in Targeted Industries and All Other Nonfarm Industries



The county group shares of employment growth by specific targeted industry varied a great deal from these overall averages. Figure 7 breaks out the distribution of targeted industry employment change by county group and target group. The bottom bar in Figure 7, which represents the sum of the seven bars above it, corresponds to the distribution of all targeted employment growth shown in Figure 6.

Figure 7

Distribution of Iowa's Targeted Industry Employment Growth by County Group, 1992 to 1997



Of the eight target groups discussed in this report, the Metals manufacturing group brought the greatest number of new jobs to the state between 1992 and 1997. Employment growth in metals manufacturing was almost evenly distributed among the metropolitan, large urban, and small urban county groups. The small urban counties slightly edged out the metropolitan counties and the large urban counties with 38 percent of the state's new metals manufacturing jobs. For both the small urban and large urban county groups, Metals was the greatest source of targeted employment gain. Rural county employment in Metals manufacturing did not change substantially during this time.

The following target groups ranked second through fifth by the number of new jobs from 1992 to 1997: Financial Services, Computing Services, Telecommunications, and Printing & Publishing. The metropolitan counties had the largest share of new jobs in all four of these groups. In fact, with 80 percent or more of new jobs in each category, the metropolitan county growth overwhelmed the growth in the other three county groups. These industries share similarities in their demand for relatively skilled workers and high-technology inputs, and they share strong linkages with one another.

Plastics manufacturing ranked sixth by the number of new jobs statewide. The small urban county group dominated the employment growth in this category, while the metropolitan counties experienced employment losses. This category represented the largest source of new jobs for the rural counties. Plastics manufacturing employment also grew in the large urban counties.

Strong gains in small urban county Foods & Related Products employment were offset by losses in the metropolitan and large urban counties. As a result, this category ranked seventh in the total number of new jobs from 1992 to 1997. Behind the Metals manufacturing group, this was the largest source of targeted employment growth for the small urban counties. Foods & Related Products brought only minor employment gains to the rural counties, representing just 10 percent of their targeted employment growth.

Due to industrial code reclassifications, meaningful comparisons of employment change by county group cannot be made for Computing & Measuring Devices. Therefore, county group shares of employment change in this target group are not shown in Figure 7. Statewide employment change in manufacturing of Computing & Measuring Devices appears, however, to be minor.

Unique industrial patterns of growth in each of the four county groups help explain some of the differences in targeted industry growth rates described above. For example, non-manufacturing employment grew more rapidly in metropolitan counties than in any other group, making their dominant growth in Financial Services, Computing Services, and Telecommunications target industries less surprising. Manufacturing employment grew more rapidly in small urban counties than in any other group, fitting with their strong performance in targeted manufacturing industries. In the next section, we try to filter out these county group effects to more closely examine targeted industry growth within the state.

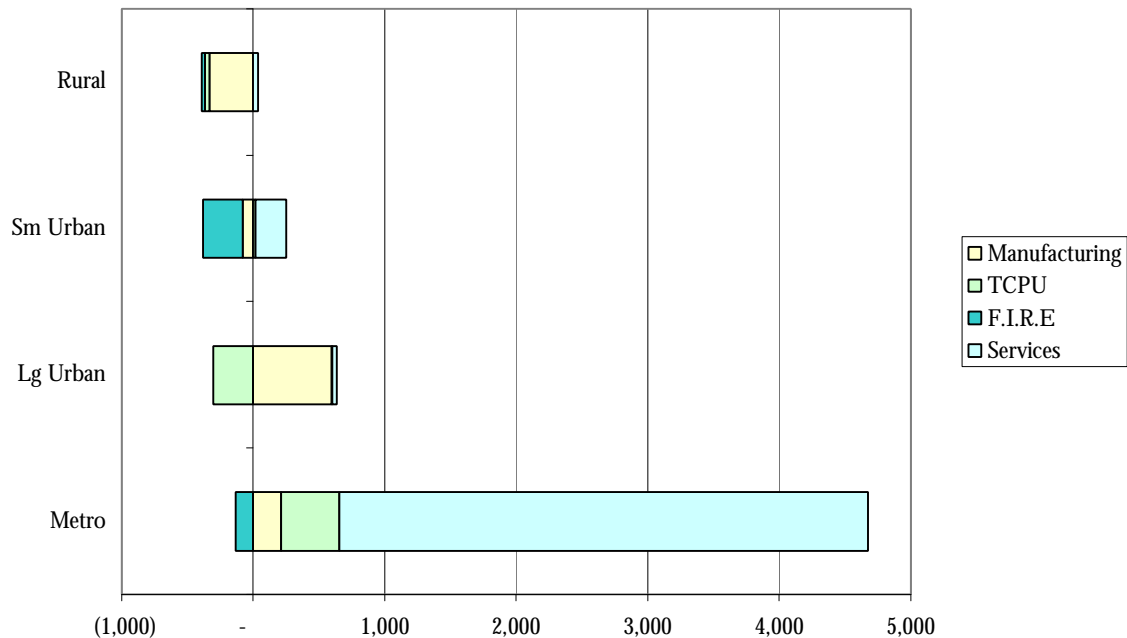
Do employment growth rates in targeted industries exceed average growth rates in the four county groups?

By industrial sector, Iowa's targeted industries grew faster than average in some county groups, and slower than average in others. Comparison of growth rates across the four county groups can be misleading, because their initial employment values vary widely. Therefore, to compare targeted industry performance across county groups, we translate the growth rate differences back into jobs by multiplying them by base year employment:

Figure 8 illustrates, in jobs, where targeted industry growth exceeded or lagged sector average growth rates by county group.

Figure 8

Targeted Growth in Excess of Division Average Rates, by County Group from 1992-97



Targeted manufacturing growth exceeded average sector growth rates in the metropolitan and large urban county groups. However, targeted growth was actually slower than average manufacturing growth in the rural and small urban counties. This means that the non-targeted manufacturing industries in the rural and small urban counties grew faster than the targeted industries. Some of Iowa's fastest-growing, non-targeted industries include manufacturers of lumber and wood products and transportation equipment.

Targeted communications industries grew faster than T.C.P.U. sector averages in the metropolitan and small urban counties, and slower than average in the large urban and rural counties. Some of the non-targeted T.C.P.U. industries include trucking, warehousing, other kinds of freight and cargo transportation, travel agencies, and utilities.

Targeted financial service industries grew slower than F.I.R.E. sector averages in the metropolitan, small urban, and rural county groups, and slightly above the average rate in the large urban counties. The non-targeted F.I.R.E. industries include real estate operators, agents, and managers, and land developers.

Growth in the targeted service industries exceeded average Service sector growth rates in all four county groups. For the rural counties, this was the only sector in which targeted industries outperformed average sector growth rates. Non-targeted service industries cover a very broad range of health, legal, social, and other services. Within the Service sector, Business Services (which includes the targeted Computing Services industries) contributed the greatest number of jobs to Iowa's economy from 1992 to 1997.

Relative to other nonfarm industries, it appears in Figure 8 that the entire "portfolio" of Iowa's targeted industries performed best in metropolitan counties and worst in the rural counties. However, targeted industry employment growth actually represented a smaller percentage of nonfarm employment growth in the metropolitan counties than in the small urban counties. Figure 9 shows targeted industry employment growth as a percentage of all nonfarm employment growth 1992 to 1997.

Figure 9

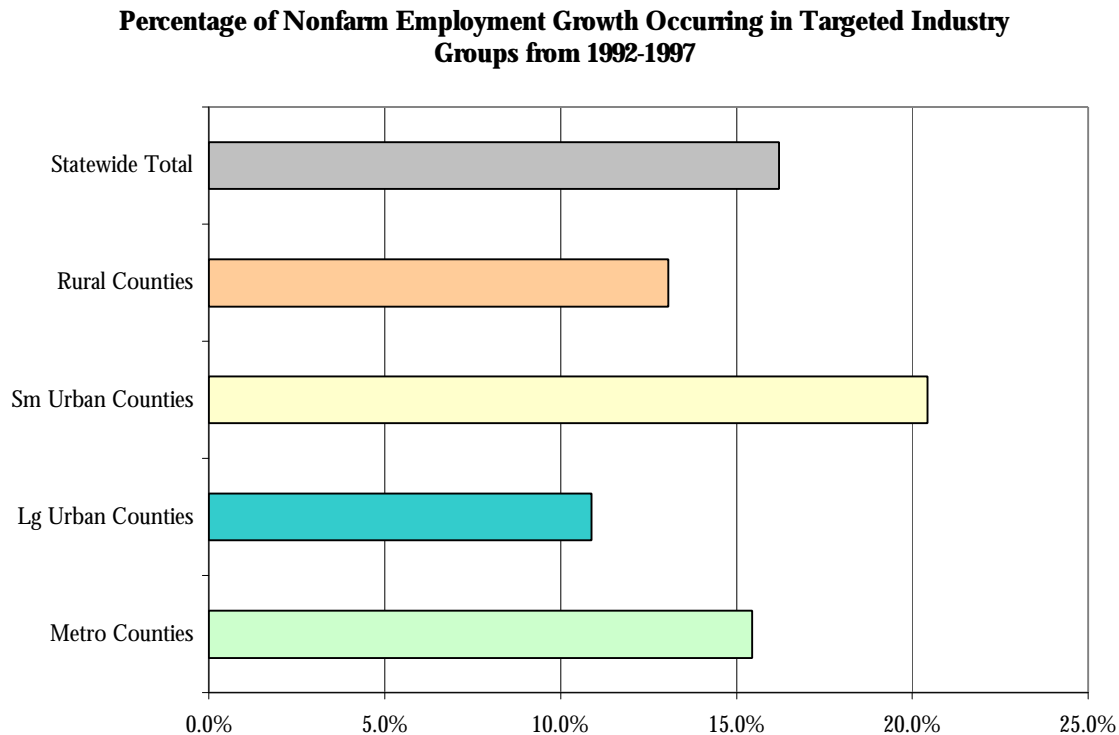


Figure 9 shows that the small urban counties had the largest fraction of recent employment growth in the targeted industries. More than 20 percent of nonfarm employment growth occurred in targeted industries in the small urban counties, while the statewide average was just over 16 percent. The small urban county group covers the majority of Iowa's geographic space with its 60 counties.

Targeted industry jobs represented just over 15 percent of nonfarm employment growth in the metropolitan counties. The metropolitan county group represents the greatest share of the state's population, with 44 percent. Earlier in this report, Figure 6 showed that Iowa's targeted industries brought the most jobs to the metropolitan counties.

Therefore, between 1992 and 1997, Iowa's group of targeted industries attracted the most jobs to the counties where the most people live, and employment growth in these industries had stronger than average importance to the largest county group. These aspects of targeted industry employment growth relate to an issue discussed in this report's introduction -- the

desire to maximize the benefits from economic development programs by reaching as many people and as many places as possible. Patterns of targeted industry employment growth between 1992 and 1997 strike a balance between people and places.

Thus far, it appears that Iowa's targeted industries have contributed to industrial diversification of the state's economy as well as geographic diversification by county group. Next, we focus on diversification by industry *within* the county groups.

Do the patterns of targeted industry employment growth correspond to existing industrial strengths and weaknesses of Iowa's county groups?

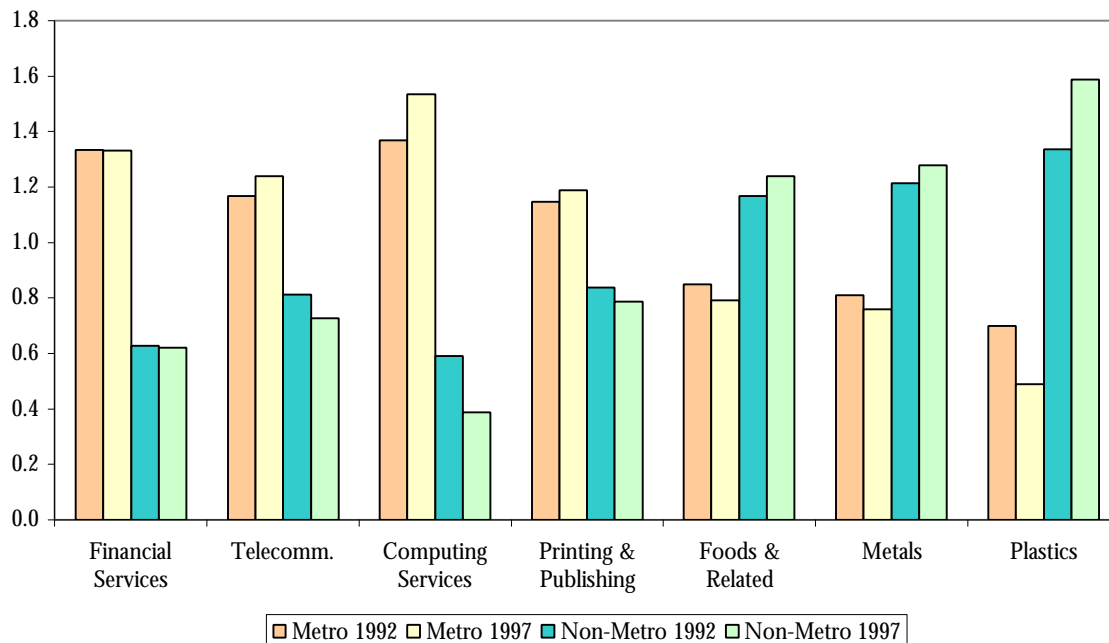
While some of the targeted industries are flourishing in Iowa, they are not necessarily flourishing in all parts of the state. The targeted service industries demonstrated a clear preference for the metropolitan counties. Most of the targeted manufacturing industries showed a preference for the non-metropolitan county groups, and especially, the small urban counties.

Patterns of targeted industry employment growth in the metropolitan and non-metropolitan county groups corresponded to their existing industrial strengths. In 1992, the metropolitan counties already had more nonfarm employment concentrated in Financial Services, Telecommunications, Computing Services, and Printing & Publishing industries than the non-metropolitan counties. The non-metropolitan counties had more nonfarm employment concentrated in Foods & Related Products, Metals, and Plastics manufacturing.

The targeted employment growth between 1992 and 1997 widened the gap between the metropolitan and non-metropolitan county groups. Figure 10 shows the county group concentrations of targeted industry employment relative to Iowa's statewide average in 1992 and in 1997. In every case where the metropolitan counties had a relative advantage in 1992, their advantage was the same or greater in 1997. In the industries where the non-metropolitan counties had an advantage in 1992, their advantage also increased by 1997.

Figure 10

Location Quotients for Metropolitan and Non-Metropolitan Counties, 1992 and 1997



The relative concentrations of Financial Services employment changed the least of all targeted industry groups between 1992 and 1997. New targeted financial services jobs ranged from a high of 5 percent of new nonfarm jobs in the metropolitan counties to a low of 1.2 percent in the small urban counties. As Figure 10 shows, the concentration of financial services employment in the metropolitan counties remained about 30 percent higher than the statewide average.

The concentration of metropolitan county employment in Telecommunications, Computing Services, and Printing & Publishing industries increased relative to statewide averages between 1992 and 1997. The metropolitan counties already demonstrated relative advantages in these industries in 1992. In contrast, their concentration of employment in Foods & Related Products, Metals, and Plastics decreased relative to statewide averages. The metropolitan counties had lower concentrations of employment in these industries in 1992. Thus, the employment growth patterns from 1992 to 1997 aligned with existing regional advantages of the metropolitan counties and the remaining county groups.

How do the targeted industries contribute to the economic health of Iowa's counties?

Several factors other than job growth help determine how industries contribute to the health of regional economies. When assessing the importance of the targeted industries to Iowa's counties, we can consider their contributions in the following areas:

- Percentage of total employment
- Percentage of total output
- Level of export activity
- Dependence on locally supplied inputs
- Average earnings per job
- Rate of job growth
- Industrial diversification
- Geographic diversification

We used these criteria to evaluate strengths and weaknesses of the eight target industry groups discussed in this report.

Financial Services

Strengths: This target group represents a very important segment of the state's economy, with high percentages of total employment and output. Average earnings per job are high relative to sector and state nonfarm averages. These industries are growing more rapidly in Iowa than the national average rate, and all four county groups had employment gains in these industries.

Weakness: Employment growth in this target group favors Iowa's metropolitan counties over the smaller counties.

Telecommunications

Strengths: Recent employment growth rates in Iowa have exceeded national average growth rates, and location quotients suggest additional growth potential for this target group. Average earnings per job in these industries exceed statewide sector averages.

Weakness: Employment growth in this target group favors Iowa's metropolitan counties.

Computing Services

Strengths: Recent employment growth rates in this target group have been extremely high. As with the Telecommunications target group, location quotients suggest additional growth potential in Iowa. Average earnings per job exceed the statewide average for service sector jobs. At least minor employment gains in this target group have accrued to all four county groups.

Weakness: Employment growth in this target group favors Iowa's metropolitan counties.

Foods & Related Products

Strengths: These industries produce a large percentage of the state's total output. They contribute to export activity for the state, and they rely on local inputs -- linkages with Iowa's agricultural and transportation industries are very strong.

Weaknesses: These industries have experienced slow employment growth, except in the small urban counties. Average earnings per job are below the average manufacturing earnings in Iowa.

Metals

Strengths: Strong growth was evenly distributed among three of four county groups. Average earnings per job exceed statewide average manufacturing earnings. This was the largest source of new jobs among all eight target groups.

Weakness: The rural counties experienced little or no growth in this target group.

Plastics

Strengths: Plastics manufacturing provided employment gains to all three non-metropolitan county groups, and represented the largest source of new targeted industry jobs for the rural counties.

Weakness: Average earnings per job are below statewide average manufacturing earnings.

Printing & Publishing

Strength: This appears to be an export industry for the state of Iowa.

Weaknesses: Growth in this category favored the metropolitan counties. Average earnings per job are below statewide average manufacturing earnings.

Computing & Measuring Devices

Strengths: Average earnings per job exceed statewide average manufacturing earnings. A low location quotient suggests that employment gains in these manufacturing industries would help diversify the state's economy.

Weaknesses: Recent employment growth in this manufacturing category has been relatively slow, both nationally and in the state of Iowa.

Summary

Iowa's targeted industry program represents an effort to maximize returns to the state's economy from focused investment of state resources. The returns associated with Iowa's targeted industries go beyond new job creation. Iowa's targeted industries have average earnings per job that exceed statewide averages for nonfarm jobs. In addition, many of Iowa's targeted industries rely heavily on local inputs. Others represent export activities for the state. Still others provide opportunities for employment growth that will help diversify the state's economy.

Technology-dependent industries were among the fastest-growing targeted industries in the state. Growth in these industries has helped diversify Iowa's economy along industrial lines. However, because most of this growth occurred in the metropolitan counties, the growth has not diversified the state's economy geographically.

Manufacturing job growth was more broadly dispersed across the state. Numerically, the greatest gains to the small urban, large urban, and rural counties all occurred in traditional manufacturing industries such as plastics and metals manufacturing.

Overall, Iowa's set of targeted industries appears to align better with the economies of the metropolitan and small urban counties than the large urban and rural counties. In the rural counties, non-targeted industries grew faster than targeted industries in almost every sector. In both the rural and large urban county groups, just one manufacturing industry represented more than half of their targeted industry employment growth between 1992 and 1997. These county groups experienced losses or weak growth in several other categories.

The metropolitan and small urban county groups each had relatively strong growth distributed among several targeted industries. However, the same targeted industries did not necessarily perform well in both metropolitan and small urban counties. Targeted manufacturing industries seemed to perform best in the small urban counties, while service and financial industries performed best in the metropolitan counties.

Conclusions

Employment growth is the most easily observed measure of return on investment in Iowa's targeted industries. The findings in this report suggest some broad conclusions about the nature of targeted industry employment growth in Iowa. Perhaps most important, the targeted industries demonstrated powerful locational preferences. These preferences appear to be influenced more by level of urbanization than by state economic development policies.

Investment in economic development policies requires consideration of risks as well as returns. Wealthy investors with large, well-diversified portfolios often tolerate the higher risks and longer investment horizons associated with high-growth stocks, such as technology stocks. Similarly, Iowa's metropolitan counties have the industrial capacity and sufficient regional wealth to expand into high-growth technology industries.

Smaller, more conservative investors often prefer traditional, "blue-chip" stocks known not for their rate of growth, but their predictability. In the past, traditional manufacturing industries have been a sound investment for Iowa's non-metropolitan counties. However, continued investment in manufacturing employment growth at the expense of growth in other sectors might eventually leave these counties vulnerable to swings in the economy.

The findings in this report highlight the difficulty of achieving a balance between geographic and industrial diversification, employment growth, and income growth. A county's likelihood of success in attracting a particular industry depends a great deal on its size, industrial structure, wealth, and labor force composition. This begs the question: Is there room in Iowa's economic development strategy to allow for regional differences in selection of targeted industries?

Policy Implications

Recent employment growth patterns have shown that Iowa's non-metropolitan counties have a lower probability of attracting high-technology service and communications employment growth than metropolitan counties. There is no evidence that greater

investment of local or state resources will offset these rates of "return" for non-metro areas. The non-metropolitan counties might achieve greater success in other kinds of non-manufacturing industries, though, and it is perhaps incumbent on researchers and policy makers to continue investigating their strengths and weaknesses further.

Policies and programs in Iowa and other states increasingly reflect the philosophy that economic development strategies should capitalize on existing regional strengths. This concern has prompted many states to adopt an industry cluster approach, which involves identifying and facilitating growth in specific "clusters," or geographic concentrations of competing or related firms.

Not to be left behind, Iowa is implementing a cluster-based strategy for targeted economic development. The Iowa Department of Economic Development recently commissioned a study that identified high-growth and emerging clusters at the statewide level. Employment concentrations in the cluster industries were then analyzed at the county level to determine which parts of the state offered the best chance for successful cluster development strategies.

Instead of selecting a set of targeted industries at the statewide level and then identifying regions in which to develop them, we propose identification of region-specific targeted industry groups. These targeted industry groups would build on the unique workforce and existing industry mix characteristics of each region.

Iowa's current list of targeted industries bears remarkable similarity to lists developed for the state of Minnesota. If our state economies share similarities in economic strengths and opportunities for growth, perhaps we might borrow from policies and programs developed there. Researchers at the State & Local Policy Program at the University of Minnesota have recommended a regional approach to targeted industry growth, and they have identified industry clusters for each of four geographic regions of Minnesota⁴. These researchers caution that statewide economic analyses and programs might overlook key industries important to specific regions within the state.

While the current targeted industry program does allow some latitude in the definition of a "targeted" industry, the state might work toward helping counties identify sets of targeted industries to fit their own needs. Statewide targeted industry policy may need to be amended and rethought so the employment growth in non-metropolitan as well as metropolitan counties can be maximized.

⁴ A copy of a preliminary report titled, "Industry Clusters: An Economic Development Strategy for Minnesota, January 1999," may be found at the Economic Development Web Site, State & Local Policy Program, the Hubert H. Humphrey Institute of Public Affairs, University of Minnesota.